

INFORMATION WARRIOR EFFECTIVENESS (IWE)



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AFRL/HEX

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The Program



INFORMATION WARRIOR

+

AFRL/HUMAN EFFECTIVENESS



INFORMATION WARRIOR EFFECTIVENESS
(IWE)

An Integrated Human Effectiveness Research
Program Focused on the Info Warrior



Approach

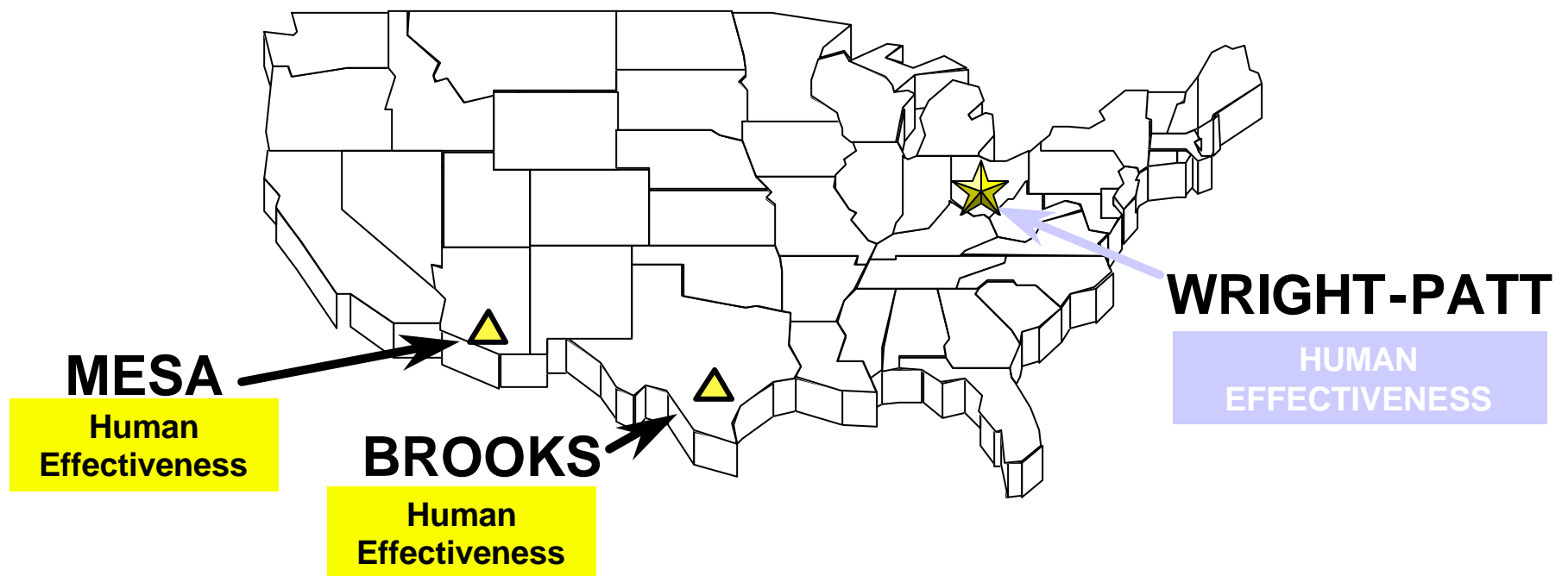
Ask the Right Questions



- How do We Relate Human Effectiveness Research to Information Warfare (IW)?
- What Are the User's Needs?
 - Who Are the Users?
 - What Requirements Have They Documented?
 - What Requirements Are Unknown?
- What Are Our Research Capabilities?
- What Have We Already Done in IW?
 - Cyber CID



HEX Locations





Human Effectiveness Technology Thrusts



Warfighter Training



Crew System Interface



Bioeffects & Protection



Deployment & Sustainment

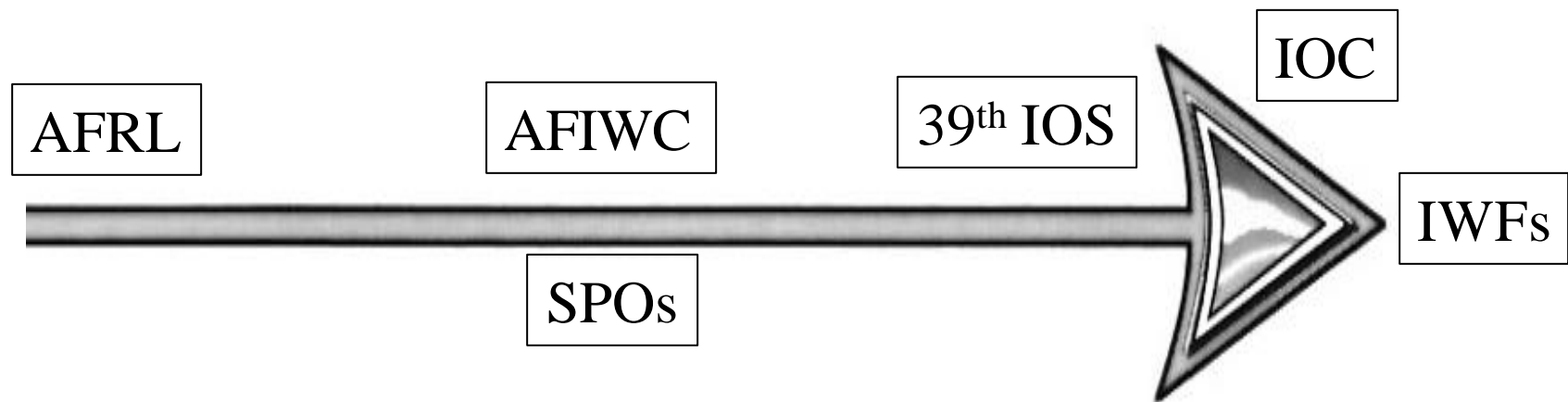


Core Technology Areas

- | | | | |
|--------------------------------------|---------------------------------------|--------------------------------|----------------------------------|
| – Distributed Training Tools | – Visual Displays | – Optical Radiation Bioeffects | – Logistics |
| – Distributed Mission Training (DMT) | – Aural Displays & Bioacoustics | – Radio Frequency Radiation | – Toxicology |
| – Night Vision Training | – Information Analysis & Exploitation | – Biomechanisms Modeling | – Chemical & Biological Defense* |
| – Information Systems Training | – Interface Technology | – Aircrew Protection | – Sustained Crew Operations |
| | – Crew Systems Integration | | *DoD PE |



Information Warfare

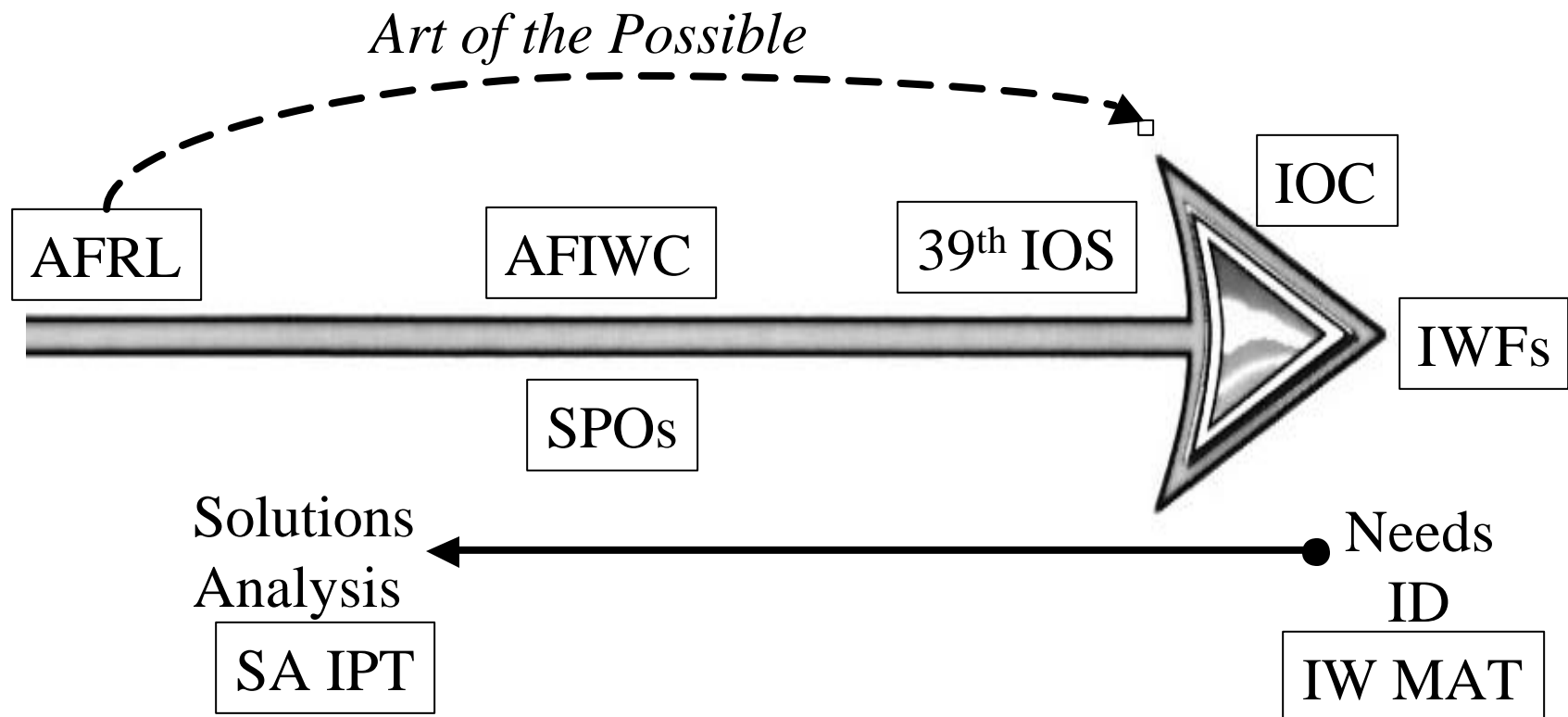




Information Warfare



Process for identifying needs and finding solutions?
Air Force Modernization Planning Process





USAF IW Mission Deficiencies **

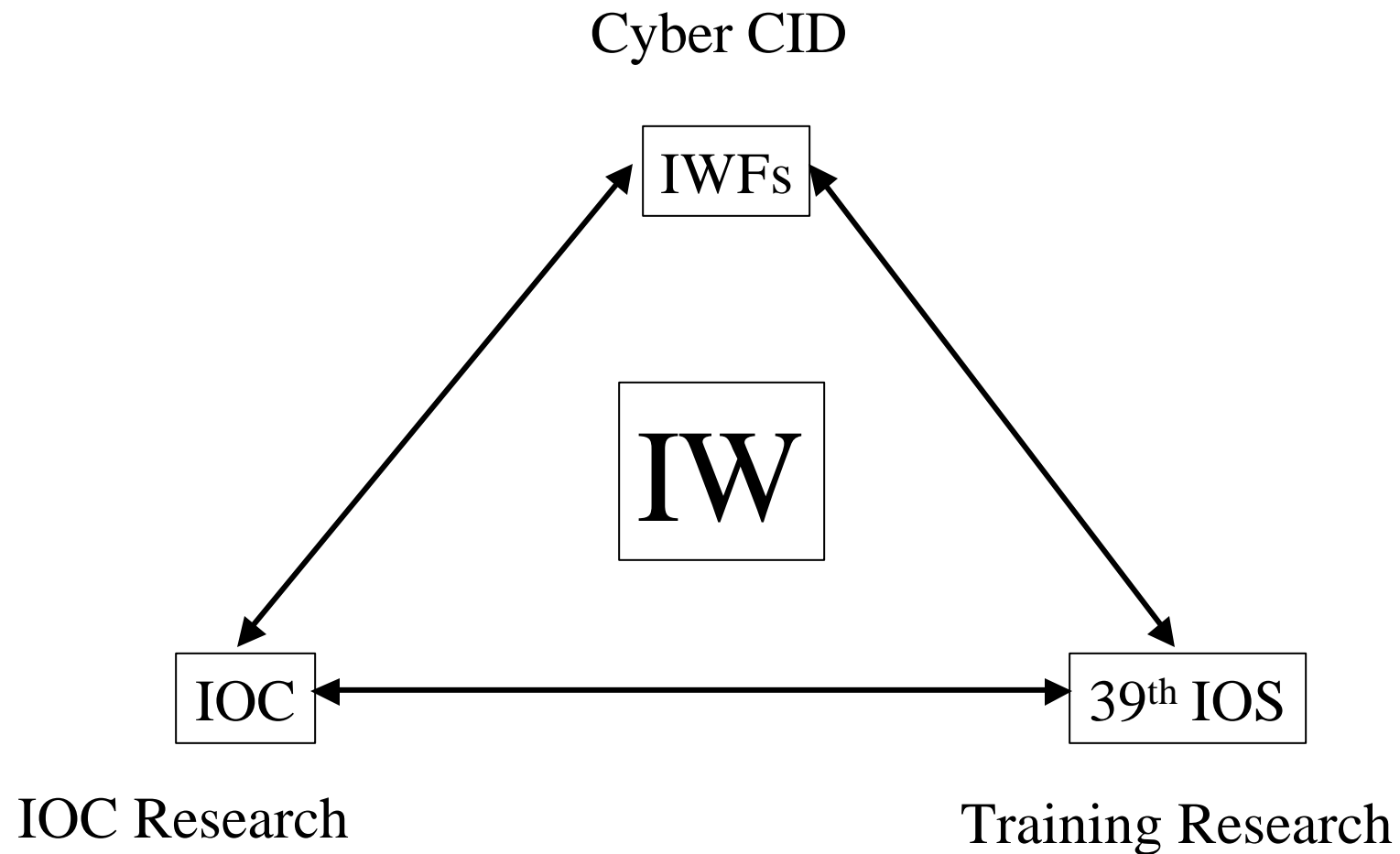
** From FY02 USAF IW Needs Summary



	FY02	FY06
Normalize IO/IW within the USAF	INT 3	
Operationalize IW	INT 4	
Standardize IO/IW terminology, structures, operational environment within DoD	INT 5	
Develop Advanced IW Course	INT 7	
Establish dedicated OPSEC evaluation manpower and funding	OP 2	
Dedicate OPSEC training programs and funding	OP 3	
Need trained, experienced Global Information Grid (GIG) infrastructure and communications system personnel	IA 5	
Need fused, comprehensive personnel profiles, globally accessible and interoperable (IA #)	IA 7	
Need to provide commander with positive control of info resources	IA 15	
Need training programs for GIG maintainers and acquirers, operators, protectors, and users	IA 19	



Info Warrior Effectiveness





Cyber CID Cognitive Systems Engineering



Information Requirements

Defining What Content is Needed
for Effective Decision Making

Supporting Information Needs

D1b.1 Location of combat resources currently which have combat power ranges/effectiveness that include the specified point in time and space.
D1b.2 Time required to dem such combat, if required.
D1b.3 Measures of combat power of the combat resources currently within range of the specified point in time and space. (this one needs help)

Decision Requirements

Abstracted Decision

D1 - "Choose combined combat objectives at a specific point in time."

Secondary Decisions:

D1a - "Monitor the enemy's state after the enemy reaches the specific point in time and space. (Goal Satisfaction Monitoring)"

D1b - "Choose among the combat resources that can bring their combat power to bear on the specific point in space and time. (Planning process availability)"

D1c - "Estimate the Enemy's state after the application of time." (Planning choice among alternatives)

D1d - "Determine how the selected combat power is initiated and executed." (Control process control)

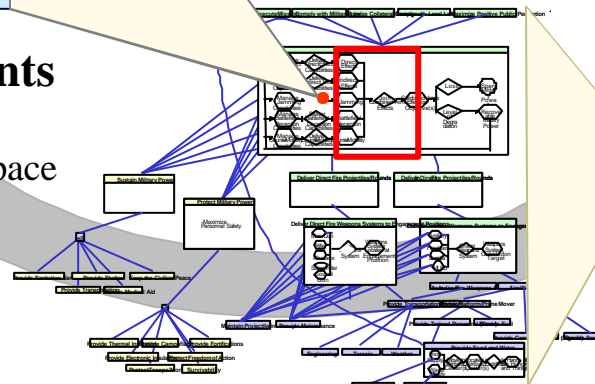
D1e - "After initiation of combat power, determine if it is currently achieving its objectives." (Feedback Monitoring)

Side Effects (Other Impacted Goals):

What will the impact be of moving combat power (a) to a specific point in space and time. (i.e., what else were they doing and what will happen if they change assignment?)

Decision Requirements

Identifying the Cognitive
Demands of the Problem Space

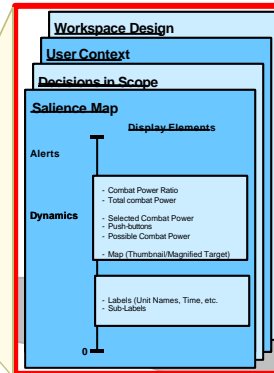


Functional Abstraction Network

Modeling Critical Domain Relationships

Display Task Description

Defining Relationship Between
Requirements and
Visualization Concept



Display Design Concept

Making the Problem Transparent

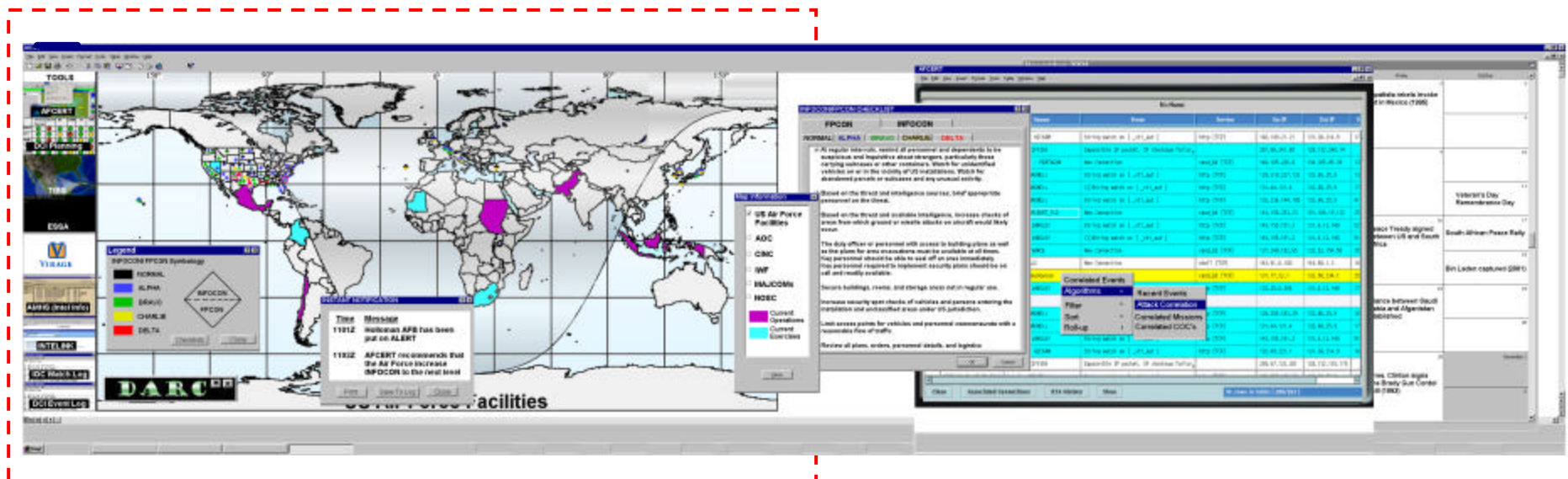


Warfighter Testing

Ensuring the system is
functional & usable.



- Engineer and demonstrate DCI large-screen display (March – April 02).
 - Will not be completed as scheduled due to changes in project priorities (Jan 02 TDY).
 - AFRL/AIA agreed detailed analyses of critical IOC processes and jobs will be required prior to display development.
 - OCI and IIW to be included in future analyses.





New Objectives

- Milestone 1 Objectives
 - Detailed analysis of the IOC-21 CONOP in the form of a written report.
 - Interview key operators to identify and map processes critical to the success of the IOC mission as stated in the CONOP (to include DCI, OCI, and IIW).
 - Identify and map critical processes that are currently taking place in the IOC (to include DCI, OCI, and IIW).
 - Provide detailed job analyses for critical positions (to include DCI, OCI, and IIW).
 - Identify areas for process and job improvements (e.g., process/job redesign, technology insertion, training, etc.).



IW Training



- Linking Training Research to 39th IOS
- Exploring Application of Existing Training Research for IW
- Investing in Advanced Research Tailored to IW Training
 - Ready to Kick Off Two Small Business Innovative Research Projects Exclusively Focusing on 39th
- Application of “Career Map” Research to IW



Advanced Research (6.2)



- Visualization
- Processes
- Career Planning
- Team Processes
- Distributed Training
- Distributed Ops



Applied Research (6.3)



- CyberCID
- Human Performance for IW
 - Builds on 6.2 Research
 - Transition Path to Fielded Capability
 - Kicks off in FY03
 - HE-funded 5-year Program



Approach

Ask the Right Questions



- How do We Relate Human Effectiveness Research to Information Operations (IO)?
- What Are the User's Needs?
 - Who Are the Users?
 - What Requirements Have They Documented?
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- What Are Our Research Capabilities?
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Human Effectiveness Vision



“Unleashing the power of human performance through technology”

- **Prepare the Force**
- **Integrate Personnel with Systems Technology**
- **Protect the Force**
- **Deploy and Sustain the Force**

Enable an Expeditionary Aerospace Force



IWE



***“Unleashing the power of the
Information Warrior through
technology”***



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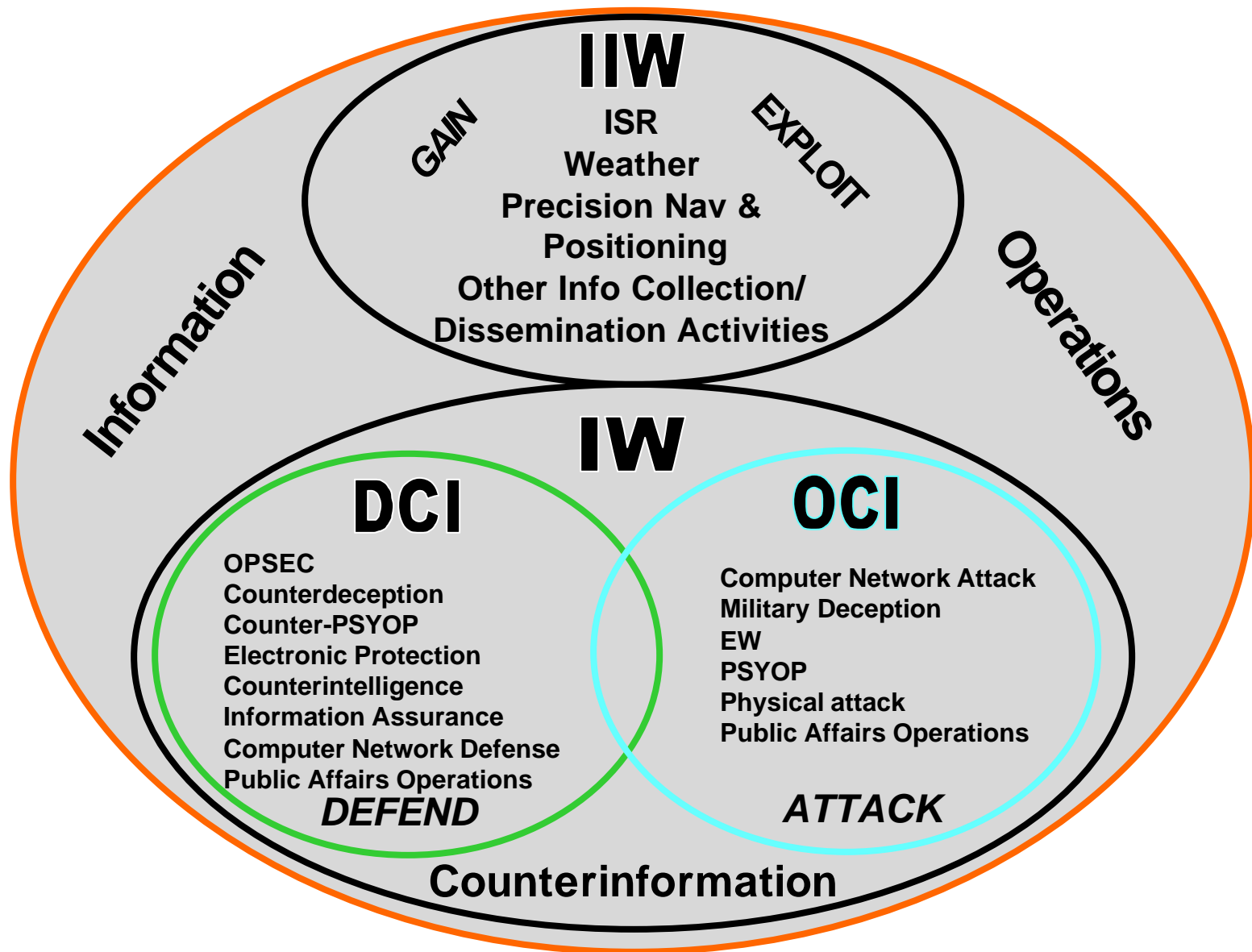
Lt Col Cindy Dominguez, DSN785-5876; cynthia.dominguez@wpafb.af.mil



- BACK UPS



Information Operations Doctrine

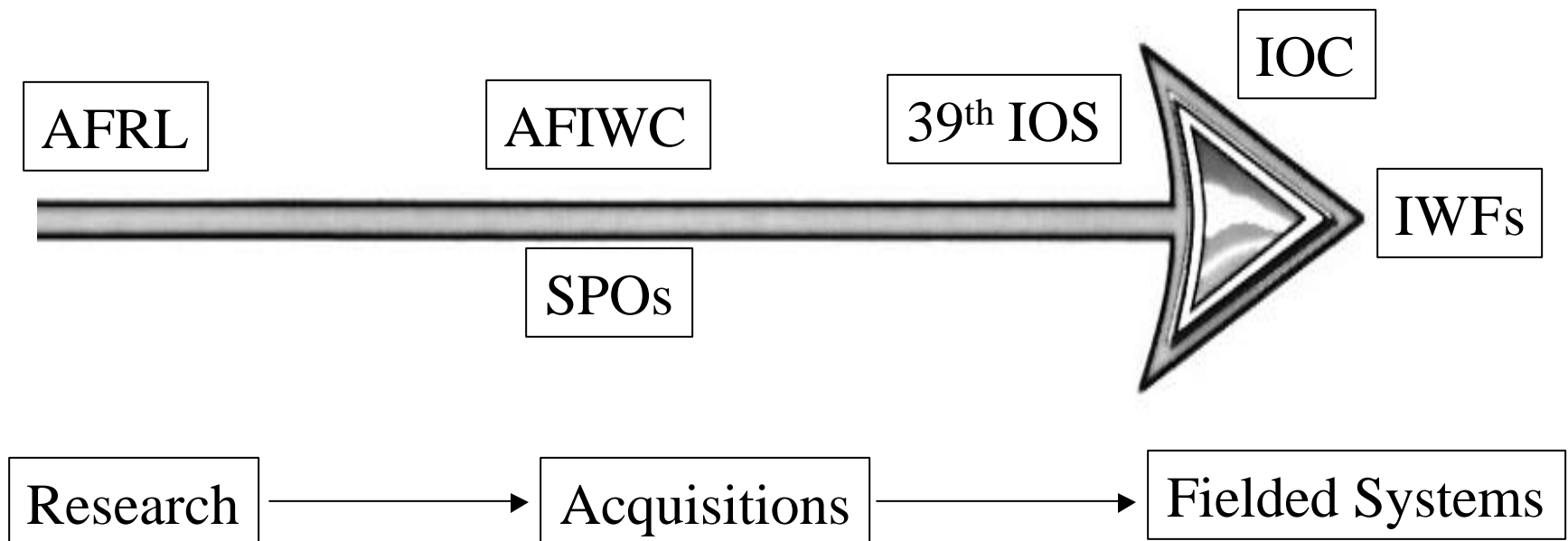




Information Warfare



Normalize Acquisitions

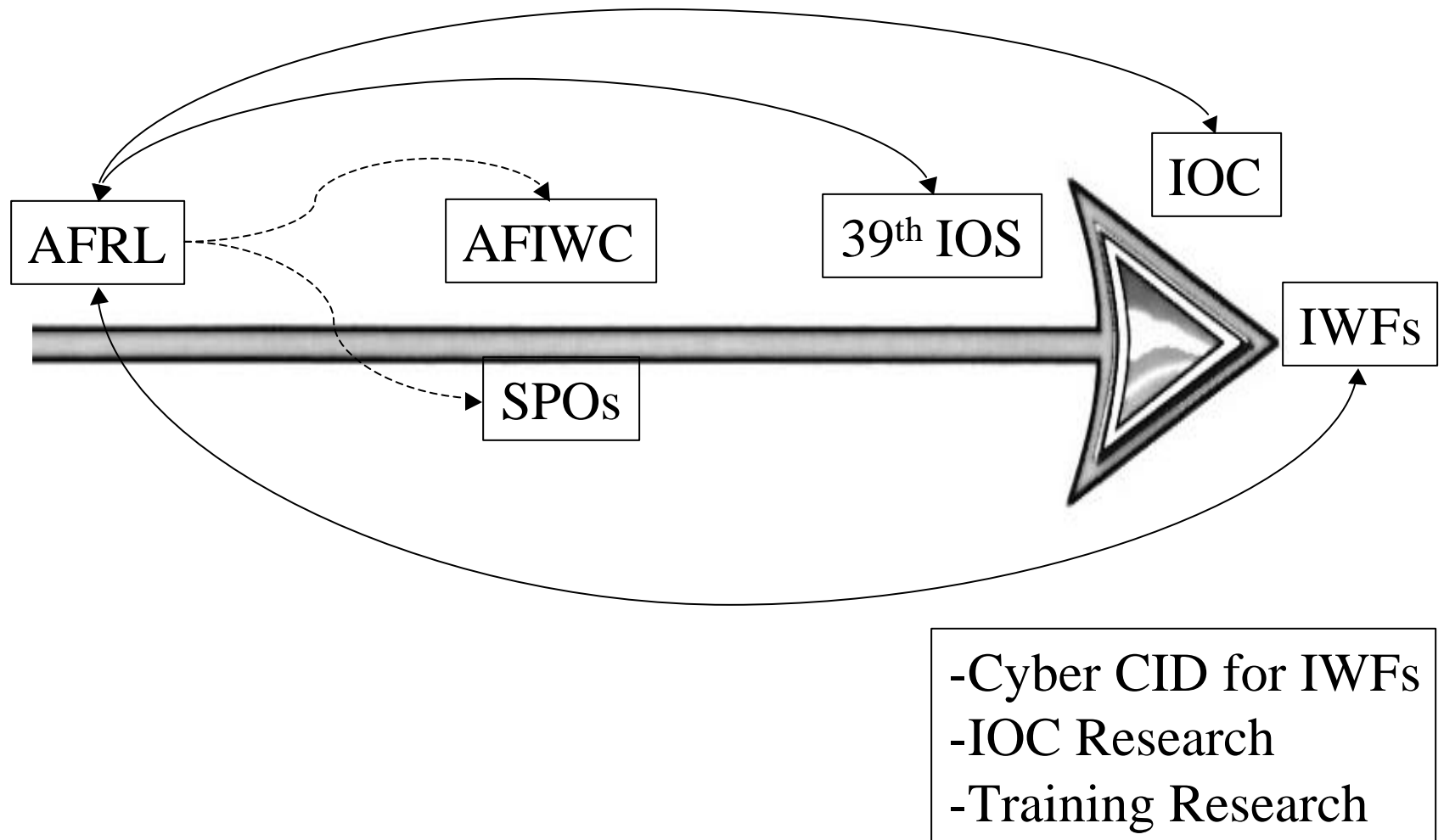




Information Warfare



Direct Research and Assistance to Warfighters

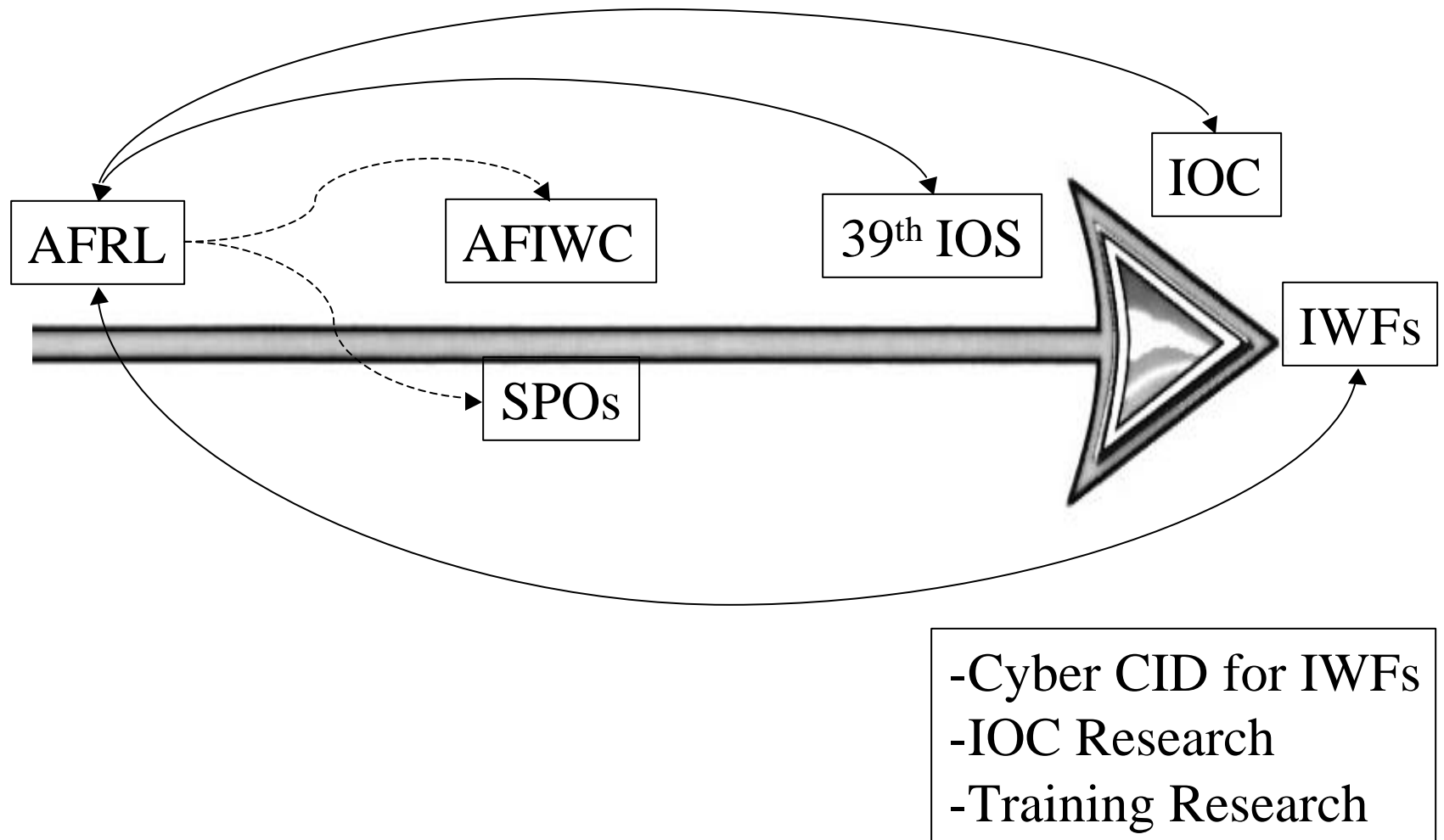




Information Warfare



Direct Research and Assistance to Warfighters





HPIW Benefits to The Warfighter



- Provide the **Commander** With a Near Real Time (<1 Hour Turn Around) Presentation of the Battlespace
- **Integrate** Info Warfare (IW) and Information In Warfare (IIW)
- Provide Near Real-time All-source Data Correlation and Emerging **Threat Characterization**
- Enhance the **Decision Making** Process in Terms of Speed and Accuracy
- Provide Real Time **Collaborative Decision Making** and Shared Virtual **Work Environment**
- **Educate and Train** Professional IO Personnel Using “Real Life” Training Environment Through DMT and Enhanced Simulation



Proposed HPISR Products



- Intelligence **Analyst** Tool Suite (Includes Hyper-spectral Imaging)
- **Effects-based** Planning and Assessment ISR Control Tools
- ISR Exploitation **Workstation** Concepts
- Distributed Mission **Training** for ISR Operations Personnel



Human Effectiveness Directorate Organization

